

Monolithic Linear IC

SANYO

No.2667A

LA4538MRipple Filter-Provided Stereo Power Amp
for 1.5V Headphone Stereos**Features**

- Low current dissipation
- Excellent reduced voltage characteristics
- Minimum number of external parts required
- On-chip power switch function
- Power amp section
 - Output power 8mW typ ($V_{CC} = 1.5V, R_L = 16\Omega, f = 1kHz, THD = 10\%$)
 - Ripple rejection 46dB typ ($V_{CC} = 1.0V, V_R = -30dBm, f_R = 100Hz$)
 - On-chip muting function
- Ripple filter section
 - Ripple rejection 39dB typ ($V_{CC} = 1.0V, V_R = -35dBm, f_R = 100Hz$)
 - Less output voltage loss
 - Pin 8 can be used to perform the muting function.

Maximum Ratings at $T_a = 25^\circ C$

| | | | unit |
|-----------------------------|--------------|------------------------|----------------|
| Maximum Supply Voltage | V_{CC} max | Quiescent | 4.5 V |
| Maximum Output Current | I_{O7} | Pin 7 flow-out current | 5.0 mA |
| Allowable Power Dissipation | P_d max | | 300 mW |
| Operating Temperature | T_{OPR} | | -20 to +75 °C |
| Storage Temperature | T_{STG} | | -40 to +125 °C |

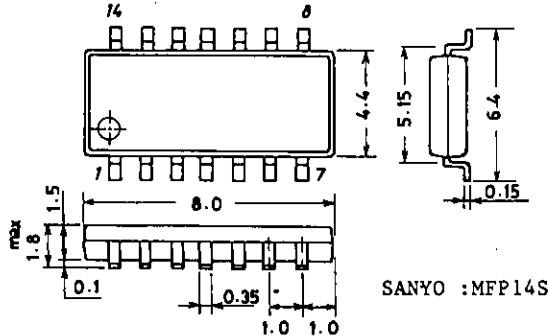
Operating Conditions at $T_a = 25^\circ C$

| | | unit |
|-------------------------------|--------------|--------------|
| Recommended Operating Voltage | V_{CC} | 1.5 V |
| Operating Voltage Range | $V_{CC\ OP}$ | 0.9 to 4.0 V |
| Recommended Load Resistance | R_L | 16 to 32 Ω |

Operating Characteristics at $T_a = 25^\circ C, R_L = 16\Omega, R_g = 600\Omega$, See specified Test Circuit.

| | | | min | typ | max | unit |
|---------------------------|-------------|---|------|-----|------|------|
| Quiescent Current | $I_{CC(1)}$ | $V_{CC} = 1.20V$, quiescent, $R_{L3} \rightarrow OFF$ | 4.5 | 7.0 | mA | |
| | $I_{CC(2)}$ | $V_{CC} = 2.50V$, pin 14 $\rightarrow GND, R_{L3} \rightarrow OFF$ | 1.5 | 2.5 | mA | |
| | $I_{CC(3)}$ | $V_{CC} = 2.50V$, pin 1 $\rightarrow GND, R_{L3} \rightarrow OFF$ | | 1.0 | μA | |
| Voltage Gain | VG | $V_{CC} = 0.90V, f = 1kHz, V_o = -20dBm$ | 27.5 | 29 | 31.5 | dB |
| Voltage Gain Difference | ΔVG | $V_{CC} = 0.90V, f = 1kHz, V_o = -20dBm$ | | 1.0 | 1.0 | dB |
| Total Harmonic Distortion | THD | $V_{CC} = 1.20V, f = 1kHz, P_o = 0.5mW$ | | 0.9 | 1.5 | % |
| Output Power | P_o | $V_{CC} = 1.50V, f = 1kHz, THD = 10\%$ | 5 | 8 | 8 | mW |

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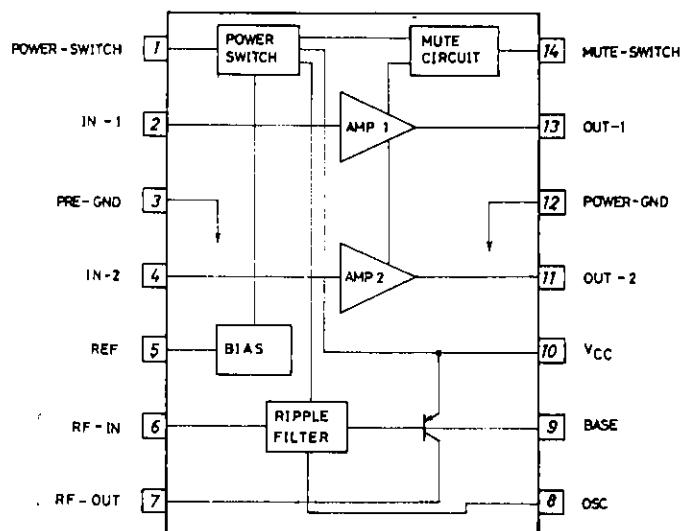
Package Dimensions 3111-M14SIC
(unit: mm)

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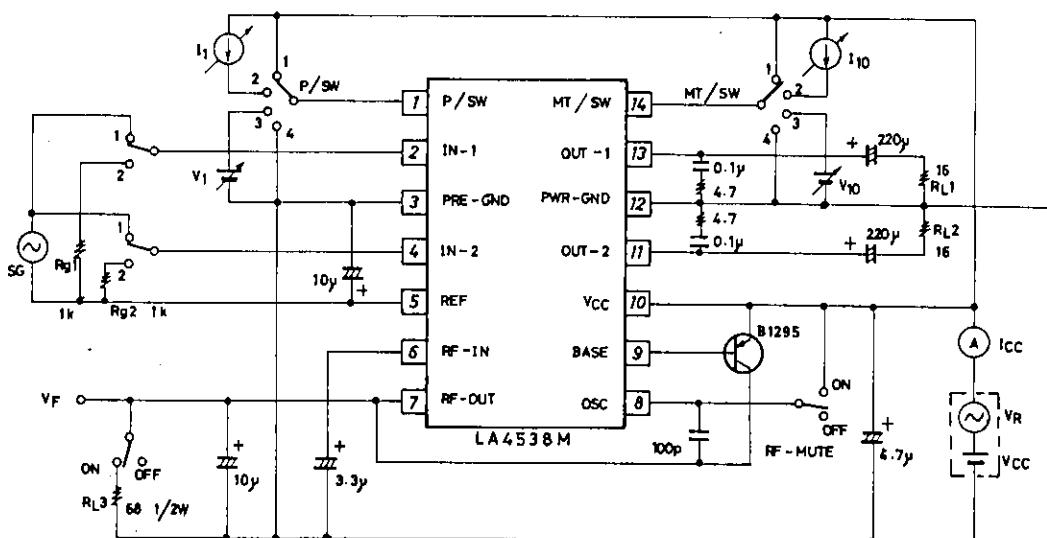
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| | | | min | typ | max | unit |
|---|---------------|--|------|------|-----|---------|
| Crosstalk | CT | $V_{CC} = 1.20V, f = 100Hz, R_g = 1k\Omega, V_o = -20dBm$ | 40 | 45 | | dB |
| Ripple Rejection (Amp Section) | SVRR(1) | $V_{CC} = 1.00V, f = 100Hz, R_g = 1k\Omega, V_R = -30dBm, BPF = 100Hz$ | 40 | 46 | | dB |
| Ripple Rejection (Filter Section) | SVRR(2) | $V_{CC} = 1.00V, f = 100Hz, V_R = -35dBm$ | 34 | 39 | | dB |
| Output Noise Voltage | V_{NO} | $V_{CC} = 2.50V, R_g = 1k\Omega, BPF = 20Hz$ to 20kHz | 55 | 80 | | μV |
| Power ON-State Current Sensitivity | $I_{1(ON)}$ | $V_{CC} = 0.85V, V_{pin5} \geq 0.5V$ | 0.1 | 1.0 | | μA |
| Power OFF-State Voltage Sensitivity | $V_{1(OFF)}$ | $V_{CC} = 0.85V, V_{pin5} \leq 0.1V$ | 0.5 | 0.6 | | V |
| Muting ON-State Current Sensitivity | $I_{14(ON)}$ | $V_{CC} = 0.85V, V_{pin5} \geq 0.5V$ | 0.1 | 1.0 | | μA |
| Muting OFF-State Voltage Sensitivity | $V_{14(OFF)}$ | $V_{CC} = 0.85V, V_{pin5} \leq 0.1V$ | 0.5 | 0.6 | | V |
| Ripple Filter Output Voltage | V_F | $V_{CC} = 1.00V, R_L = 68\Omega$ | 0.90 | 0.94 | | V |

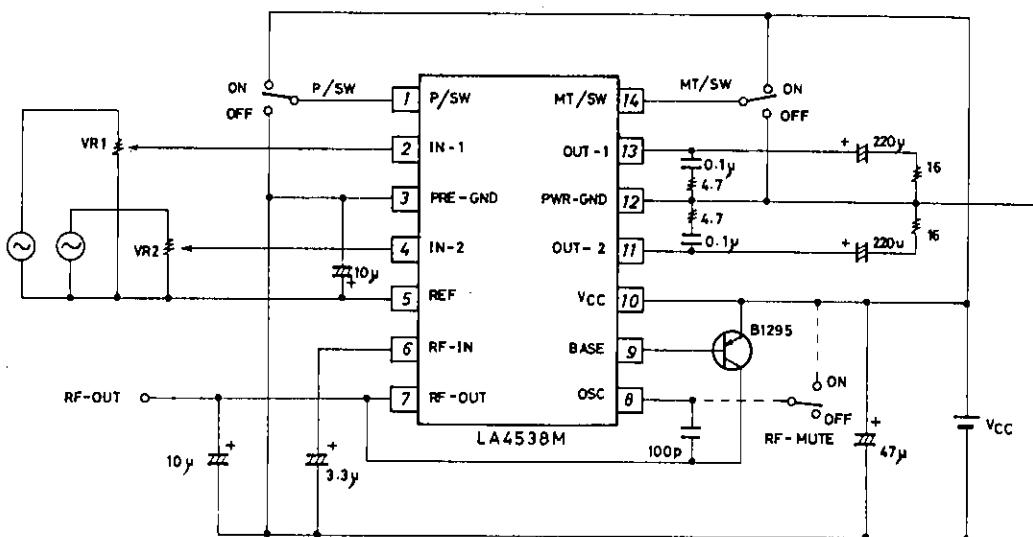
Equivalent Circuit Block Diagram



Test Circuit

Unit (resistance: Ω , capacitance: F)

Sample Application Circuit

Unit (resistance: Ω , capacitance: F)

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